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IN THE

Supreme Court of the United States

OCTOBER TERM, 1967

No. 1384

MODERN PLASTIC MACHINERY CORP.,

Petitioner,

vs.

FRANK W. EGAN & COMPANY and
WILLIAM H. WILLERT,

Respondents.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE THIRD CIRCUIT

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To the Honorable
the Chief Justice and Associate Justices
of the Supreme Court of the United States:

Your Petitioner, Modern Plastic Machinery Corp., prays that a writ of certiorari should issue to review the judgment of the Court of Appeals for the Third Circuit entered on December 29, 1967, 387 F.2d 319, petition for rehearing denied February 1, 1968.

Opinions of the Courts Below

(a) Opinion of the District Court reported at 260 F.Supp. 22 (Appendix A).

(b) Opinion of the United States Court of Appeals for the Third Circuit in Frank W. Egan & Company and William H. Willert, v. Modern Plastic Machinery Corp., No. 16,446 dated December 29, 1967, reported in 387 F.2d 319 (1967). Copies of the Opinion, the Judgment and the order denying the Petition for Rehearing are appended to this petition (Appendices B, C and D).

The patent here in suit is also before other courts in the following case:

Frank W. Egan & Company and William H. Willert, v. the New Britain Machine Co. in the United States District Court, Hartford, Conn., pending under No. 12,427, not yet decided.

Jurisdiction

1. This is a suit arising under the Patent Laws of the United States, Title 35; 35 U.S.C. § 281; 28 U.S.C. §§ 1338 (a) and 1400 (b).

2. The jurisdiction of this Court is invoked under Title 28, Section 1254 of the United States Code.

3. The date of the decree which petitioners seek to have reviewed is December 29, 1967. Petition for rehearing was denied on February 1, 1968.

Question Presented

The principal and sole question presented is the validity of claims 1 and 4 of the Willert patent No. 2,734,226. The District Court found invalidity of claims 1 and 4, but did not rule on the issue of infringement and the Court of Appeals for the Third Circuit reversed finding validity of claims 1 and 4, and remanded the case to the District Court for determination of the infringement issue.

Statutory Provisions and Procedure Rule Involved

This case involves Sections 101, 102, 103, 112 and 282 of Title 35 of the United States Code, and Federal Rule of Civil Procedure Number 52, all of which are set forth in Appendix F hereof.

Statement of the Case

The patent in suit (Appendix for Appellants, p. 581a) entitled "Injection Molding Apparatus", discloses and claims a plastic material plasticizing and delivering mechanism which can be employed without a mold and preferably only to an injection molding machine.

A plastics injection molding machine consists of two basic units. The injection unit, to which the alleged Willert invention relates, also includes a reciprocating screw, and the mold into which plastic material is injected.

The District Court, speaking through Judge Wortendyke, stated in its opinion, after a trial of about 2 weeks, as follows (Appendix A, p. 46):

> "I find as a fact, and *it is conceded by the plaintiffs*, that *each* of the structural features of the Willert patent is disclosed in the prior art." (Italics added.)

The District Court found further that "claims 1 and 4 of the patent in suit do not *explain* this purported description of the manner in which the screw retreats." (p. 46)

In the trial of this case before the District Court, the plastic material plasticizing and delivering mechanism was shown and demonstrated on a model machine and the District Court was clearly advised in the premises. The District Court rendered an opinion and made findings of fact and conclusions of law.

One of the findings held that Plaintiffs (Respondents herein) themselves in a footnote in their brief (p. 49b) state:

> "The structure for applying an adjustable back pressure to a reciprocating screw was then [1950 and 1951] available (e.g. Wiedmann (D-8), Fig. 1, valve 10 and associated hydraulic circuitry) *to any plastics injection molding machine designer* who wanted to incorporate that feature in his machine." (Italics added.)

It was only logical when the District Court concluded that Wiedmann's hydraulic transmission patent, therefore, was a structural element old in the art and, as such, is a proper reference for determining obviousness of the claims in suit. (*The Gould-National Batteries, Inc.* v. *Gulton Industries, Inc.*, 361 F.2d 912, 914 (3rd Cir. 1966). Section 103 of the Act expressly contemplates that the "subject matter sought to be patented and the prior art may differ" and yet render obvious the subject matter as a whole. The District Court found invalidity of the claims 1 and 4 of the Willert patent upon applying the doctrine of *Graham* v. *John Deere Co.*, 383 U.S. 1, 17 (1966). The Court of Appeals of the Third Circuit found validity of claims 1 and 4 of the Willert patent after applying the same teachings of the *Graham* and *Adams* cases. There is a direct conflict of determination between the District Court and the Court of Appeals for the Third Circuit, based on the same doctrine. It appears that the Court of Appeals misconstrued the doctrine of *Graham* v. *John Deere Co.*, particularly in the light of Plaintiffs' (Respondents') concession. The Court of Appeals for the Third Circuit, while referring to *Graham* v. *John Deere Co.*, did not apply the test of patentability provided therein.

Reasons for Granting the Writ

The discretionary power of this Court to grant a writ of certiorari is involved upon the ground of the direct

disagreement between the District Court, 260 F.Supp. 22, and the Court of Appeals for the Third Circuit, 387 F.2d 319, as to the validity of claims 1 and 4 of the Willert patent.

In accordance with the thoroughly established practice of this Court, such a conflict between the decisions of the District Court and of the Court of Appeals, particularly when coupled with the important question of Federal Law involved and when both Courts base their decision on the same doctrine enunciated by the same guiding case (*Graham* v. *Deere*), which constitutes a mark stone on the issue of obviousness, and thus constitutes special and important reasons for the grant of the writ as provided in Rule 19.1 (b) referring to a Court of Appeals which has decided a federal question, in a way in conflict with applicable decisions of this Court.

With the prior art the same, the District Court held the Willert patent invalid and the Court of Appeals overturned the decision of the District Court and held the Willert patent valid. There is a fundamental difference between the District Court and the Court of Appeals in their respective legal views as to the patent in suit, in spite of Respondents' concession.

The discretionary power of this Court to grant a writ of certiorari is involved upon the further ground that the decision of the United States Court of Appeals for the Third Circuit is a decision involving a question of Federal Law, namely, as to test of patentability that is contrary to that set forth in the Statute, Title 35, Section 103, of the United States Code. The test of patentability under the Statute is an important question of Federal Law which should be settled by this Court.

A further reason is that the decision of the Court of Appeals for the Third Circuit is a decision with respect to review of Findings of Fact by the District Court that

is in conflict with the express provisions of Rule 52 of the Federal Rules of Civil Procedure; and is in conflict with the decisions of this Court upon that question, and is in conflict with the decisions of other Courts of Appeals.

A still further reason is that this case is a dispute rising beyond the interest of the parties involved in this litigation, since numerous manufacturers in the United States and manufacturers in foreign countries who import the machine into the United States have been threatened by Respondents herein, and as far as it is known to the Petitioner at the present time, Respondents already instituted patent infringement action on the same Willert patent in suit against one of the U.S. manufacturers. Unless the reversing decision by the Court of Appeals for the Third Circuit is properly evaluated, numerous additional suits for patent infringement may be instituted by Respondents.

Argument

This case presents a stronger justification for grant of the writ than the usual case wherein a patent has been litigated, because in a surprising disregard of the Finding of Facts by the District Court, an alleged novel concept has been found by the Court of Appeals which concept was not only clearly found in the prior art by the District Court, but even has been conceded as old by the Respondents themselves. This alleged novel concept is "the adjustable back pressure" which controls the speed of the rearwarded movement of a reciprocating screw in a barrel of an injection molding machine.

Respondents instituted this suit alleging validity of the Willert patent and infringement by Petitioner. The District Court, Judge Reynier J. Wortendyke, Jr., applied the test of "obviousness" under Section 103 and in accordance with *Graham* v. *John Deere Co., supra, U. S.* v. *Adams*, 383 U.S. 39 (1966) and *Calmar, Inc.* v. *Cook Chemical Co.*,

383 U.S. 1 (1966) and after an exhaustive and comprehensive study, found claims 1 and 4 of the Willert patent invalid (Appendix A), finding the prior art, particularly the Wiedmann patent 2,397,395 (Appendix for Appellants, p. 683a), to disclose means to impose an adjustable "back pressure" to be old.

The District Court stated that it did not consider secondary considerations, such as, commercial success, and the numerous licensees of the Willert patent, since the licensees of Respondents were licensed under a machine *not embodying the Willert patent.* The District Court found that even the licensed machine of *Egan* (Willert's exclusive licensee) does not incorporate the structure of the claims of the Willert patent and that "despite this, Egan sought protection for the machine, which he had manufactured, by selling and labeling it under the Willert patent". (Appendix A, p. 52)

Finding that the patent in suit was invalid, the District Court did not reach the issue of infringement "since an invalid patent cannot be infringed" (Appendix A, last two pages of the District Court opinion).

On appeal, in the Court of Appeals for the Third Circuit, for the first time Respondents presented a new theory that the entire essence and contribution of the Willert patent was the "adjustable back pressure", as applied to plasticizing (i.e., obtaining a better plastic consistency before molding) and that although the prior art admittedly showed the same in other related fields the invention was solely the *"concept" of recognizing* the benefit of adjustable back pressure in plasticizing and the contribution of Willert was this recognition that such adjustable back pressure could be applied in a molding device to control plasticizing (Appellants' Reply Brief before the Court of Appeals, p. 10).

This recognition of the "concept" was first set forth by Respondents and was accepted by the Court of Ap-

peals in spite of the fact that the claims 1 and 4 of the Willert patent call for a mechanism, not a concept—

> "Willert employs a method of achieving the result needed by the industry *conceptually different* from that disclosed by the prior art, and indeed, uses the hydraulic 'back pressure' in a manner neither indicated by the prior art nor obvious to a person skilled in the art, *at least on the record of this case*" (Appendix B, p. 61). (Italics added.)

The Court of Appeals even admitted (Appendix B, pp. 61, 62) that—

> "While back pressure may have resulted with respect to the retreat of the hydraulic fluid in the Italian patent, adjustable back pressure was not mentioned [this not withstanding the fact that the word 'adjustable' is not even set forth in the claims 1 and 4, in issue, although specifically set forth in the other claims and, therefore, any 'back pressure' shown in *any* patent, whether adjustable or not, is properly anticipatory] and the resultant back pressure was inconsequential and *not conceptually related to the invention.* It remained for Willert to *recognize* that adjustable back pressure, of *sufficient magnitude,* created through the use of hydraulic force *opposing* the retreat of the screw, resulted in eliminating substantial problems of the industry. It is the back pressure which causes more internal heat to be generated, obtaining greater uniformity of heat and its distribution, so essential to the proper plasticization and homogenization of the plastics material; speeds up the process, and reduces the likelihood of air bubbles and similar disruptive occurrences." (Italics added.)

The Court also erroneously stated that Petitioners' experts "hailed the precise point of Willert's invention, the

importance of the concept and its significance". And in a footnote cited that the—

> "defendant's executive vice-president, Leslie J. Kovach, in a paper which he presented to the American Society of Mechanical Engineers, evaluated the 'in-line reciprocating screw' of the *Willert patent* as a 'great advance in the processing and economy of plastic materials', and the adjustable back pressure functioning of the reciprocating screw as 'the real breakthrough in this new plasticizing concept'. The paper, incidentally, was presented in late 1964 after the instant suit was commenced." (Appendix E) (Italics added.)

However, as compared in Appendix E the plain fact of the matter is that Kovach never claimed that it was the *Willert patent* which was the break-through. The Kovach article *does not mention the name Willert,* but was referring to the break-through being the back pressure invented before Willert, namely, in the prior art. This was a *gross evidentiary error on the part of the Court of Appeals* and one which was promoted by the beyond fair comment distortion of Respondents before the Court of Appeals.

The Court of Appeals, as well as Respondents, admitted that all elements of the claims were both old and that only the elements "(f)" "(g)" disclosing the "back pressure" and a "limit switch" for stopping the retreat of the screw to determine the mold shot-size, respectively, were to be considered for the "obviousness" test, and to be compared with the prior art.

The Court of Appeals said that "the Plaintiffs [Respondents] here do not deny that the elements of the apparatus involved are old." Their concession includes the hydraulic system, as to which, Wiedmann shows "adjustable back pressure". The Court of Appeals, however,

stated that the use "in a remote cited art certainly suggests it to be less likely that a person of ordinary skill in that pertinent art would have arrived at the result achieved by the patent in suit". This statement is rather surprising because Wiedmann is part of the art of hydraulic controls and is thus in the storehouse of knowledge to which the men skilled in the plastic art will look.

The Court of Appeals eliminated element "(g)" correctly stating that "indeed, the file wrapper specifically shows the citation of the Dinzl patent as disclosing a limit switch to control the length of travel of the plunger". (p. 60)

The Court of Appeals pointed to the "back pressure" as the "precise point of Willert's invention, the importance of the concept and its significance" (Appendix B, p. 62) and clearly attributed the entire patentable invention to this one feature of "adjustable back pressure" in plasticizing machines.

Petitioners respectfully submit that, even assuming that "*adjustable* back pressure" was properly called for in claims 1 and 4 (which it was not, *adjustable* not being in the claims 1, 4 but being in other claims), it clearly was an error of the Court of Appeals not to find the same "adjustable back pressure" in the prior art, as it has been done by the District Court.

Even assuming that Willert's invention is to be judged on the basis of whether adjustable back pressure, as his contribution, was not obvious from the cited art, clearly this feature is disclosed in the cited art.

The Court of Appeals admitted that the Italian patent (Appendix for Appellant, p. 658a) shows back pressure, but held that it was not realized in the Italian patent that if a greater back pressure were provided, such would provide the compacting (plasticizing) results of Willert, completely neglecting that claims 1 and 4 do not even call for any back pressure at all and much less for a particular back pressure.

Therefore, the Circuit Court came to a very narrow holding by first deciding that "back pressure", the new concept offered by Respondents, was the heart of the invention; and then accepting the view proffered by *Respondents that even though such back pressure was shown per se* in related fields, Willert was the first to recognize that by actually using a *sufficient amount* of back pressure certain results and improvements in plastic consistency would be achieved. There is no basis in claims 1 and 4 for this contention, and even not in the specification, which is *completely silent about back pressure* and is evidently *an afterthought created for the purpose of this litigation* (cf. *Graham* v. *John Deere Co., supra,* at 25).

The Circuit Court completely erroneously evaluated the claims of the patent of Willert. First, the Court did not even recognize that a claim is to stand for what it states in clear ordinary terms. Then, as applied to the teachings of the *Graham* cases (*supra*), if any prior art teaches or meets these *terms* of the claim, that claim is anticipated.

Specifically, the claims 1 and 4 of the Willert patent call for "means for selectively forcibly but yieldingly opposing reciprocation of the screw in the passage in a rearward direction." Now this language calls for *any means for doing that function,* 35 U.S.C. 112 (last paragraph). Accordingly, any prior patent showing *any* "means . . . opposing reciprocation of the screw . . ." anticipates such broad language, even if such means does not squeeze out air bubbles in plastics, etc. (i.e. "back-pressure"—plasticizing). For example, the Willcox, *et al.,* patent (Appendix for Appellant, p. 680a) shows a control valve which is used to permit the screw to retreat and opposes retreat by fluid exiting from the chamber behind the piston through the control valve hole.

The essence of Willert's invention as found by the Court, i.e., the back pressure on the plastic, was not set forth in *Willert's claims 1 and 4,* because the claims only call for "means for selectively forcibly but yieldingly opposing reciprocation of the screw in the passage in a rear-

ward direction". Any *opposing* is forcibly. Any valve which opens to permit a screw to retreat has some frictional back pressure force which opposes the moving of the screw, and therefore even though it might not be sufficient for squeezing out air bubbles in certain consistency plastics, the claims as drafted call for no more than even these prior art patents. Also, it should be noted that nowhere in the Willert patent itself does it mention "back pressure" for the purpose of squeezing out the air bubbles. Back pressure was a fiction first perpetrated in the Court as the "inventive concept". (Appellants' Reply Brief, p. 10)

Accordingly, the Court of Appeals should not have added the attributed essence or concept of "back pressure" into the Willert claims which did not call for that specific use. In other words, Willert's claims, as they should have been considered by the Court, were much remote from the "inventive concept" or essence of his invention found by the Court of Appeals, and therefore any of the prior art showing any opposing back pressure anticipates the Willert claims.

It is well settled law that an inventor is limited to that, which he states in his claims as his invention as merely construed in the light of the specification, *United States* v. *Adams*, 383 U.S. 39, 48, 49 (1966).

Yet, nevertheless, even if we correct Willert's claims, as the Court of Appeals apparently did, to relate only to back pressure on the plastic *for compacting* same, then even still the prior art, especially the Italian patent, the Beck article and patent (Appendix for Appellant, pp. 757a, 727a, respectively) and the Wiedmann patent, clearly teaches this concept, and in any event, this Willert patent should not have been held valid.

The Willert Patent strikes a remarkable parallel to the Graham and Calmar cases

The *Graham* cases (*Graham* v. *John Deere Co.*; *Calmar, Inc.* v. *Cook Chemical Co.*, and *U. S.* v. *Adams*) considered

three very simple structures two of which, namely in *Graham* v. *John Deere Co.* and *Calmar, Inc.* v. *Cook Chemical Co.*, were held to fall on the side of invalidity while the device in *U. S.* v. *Adams* was decided on the side of validity. The three cases alone indicate the extent and limits of the "obviousness" concept as the test of patentable invention which has been analogized to that of the "reasonable man" concept. However, with patents the "inventive concept" is considerably more abstruse. Therefore, in order for this Honorable Court to properly clear up the question of what is invention or "obviousness", this Court selected these three illustrative cases (the *Graham* cases) to illustrate structures which show *as examples* what "obviousness" is intended to mean, as the best manner of explaining what "obviousness" is; only examples can illustrate the range and boundaries of the difficult concept of invention and non-invention, patentability and non-patentability.

A clear parallel exists with the case at bar.

To remove air bubbles and compact a plastic, it is *a priori* to *compress* same. To do same in a reciprocating screw injecting device (the device admittedly old) while the screw is retreating due to loading of the plastic, similarly, a *compressive* force on the plastic must be provided. Since the screw is and must retreat during loading, such a compressive force must be a back, reverse force to the direction of the retreating of the screw, i.e., the "back-pressure". This is the same back-pressure of the prior art, Italian, and Beck patents as well as Beck's article. The back-pressure must clearly be of sufficient force to compact the particular plastic, yet not strong enough to stop the retreat or loading of the screw (i.e., "forcibly but yieldingly").

This concept of *compacting* to remove air bubbles and obtain uniform density of the shot, is similar and a *priori*, to the fact of *Calmar, supra* at 34, 35, that to obtain a good seal above the collar the hold-down cap *must* be spaced

above the container cap or bottle neck, even though the drawing of the prior art (Fig. 3) did not disclose this space.

Similarly the drawing of the Willert *et al.* patent and its dimensions does not preclude that Willert *et al.* must be forced rearward solely hydraulically before plastic can be conveyed to the front of the screw in the "open" and "normal" position.

The Test of Patentability Applied by the Court of Appeals for the Third Circuit in Conflict With the Requirements of the Statute

The *Graham* cases, *supra,* require as the test of patentability under § 103 an inquiry into several related factors, namely:

(1) a determination of the scope and content of the prior art,

(2) an evaluation of the differences between the prior art and the claims at issue, and

(3) applying and determining the level of ordinary skill in the art, and

(4) against this background, obviousness or non-obviousness as a question of law, is determined. (383 U.S. 17)

The Wiedmann patent of the prior art teaches adjustable back pressure in a hydraulic system to control the cutting pressure; the Italian patent teaches back pressure on a retreating screw in a plastic molding device resisting the retreat of the screw; and the question is whether it is obvious from such prior art teachings for one skilled in the art to use same in injection molding devices to control the *compacting* of plastic while the screw retreats under the accumulation of the plastic.

In the Wiedmann patent, the back-pressure was used to maintain a constant back-pressure against a cutting blade attached to the front of the piston, whereas similarly in plastic machines the back-pressure is used to apply a constant pressure upon the plastic in front of the screw. The purpose for which the back-pressure is used of course depends on what the machine operates on.

In the *Graham* cases, *supra,* the Court stated that:

> "We have concluded that the 1952 Act was intended to codify judicial precedents embracing the principle long ago announced by this Court in *Hotchkiss* v. *Greenwood,* 11 How. 248 (1851), and that, while the clear language of § 103 places emphasis on an inquiry into obviousness, the general level of innovation necessary to sustain patentability remains the same." (at pp. 3, 4)

This Court stated that Thomas "Jefferson did not believe in granting patents for small details, obvious improvements, or frivolous devices. His writings evidence his insistence upon a high level of patentability." (at p. 9)

Hotchkiss v. *Greenwood,* 11 How. 248 (1851), was cited to involve a substitution of materials and the Court stated that:

> "[U]nless more ingenuity and skill . . . were required . . . than were possessed by an ordinary mechanic acquainted with the business, there was an absence of that degree of skill and ingenuity which constitute essential elements of every invention. In other words, the improvement is the work of the skillful mechanic, not that of the inventor." (at p. 11)

This Court stated we have been urged to find in § 103 a relaxed standard, however, the Court found that the standard has remained invariable in this Court. The Court further stated:

> "We conclude that the section was intended merely as a codification of judicial precedents embracing the

> *Hotchkiss* condition, with congressional directions that inquiries into the obviousness of the subject matter sought to be patented are a prerequisite to patentability." (at p. 17)

A. & P. Tea Co. v. *Supermarket Corp.*, 340 U.S. 147 (1950), was cited several times in *Graham* v. *John Deere Co., supra.*

In *A. & P.* it was held that one cannot take from the storehouse of known valuable knowledge and use same in a different specific setting and be entitled to invention.

> "The function of the patent is to add to the sum of useful knowledge. Patents cannot be sustained when, on the contrary, their effect is to subtract from the former resources freely available to skilled artisans. A patent for a combination which unites old elements with no change in their respective functions, such as is presented here, obviously withdraws what already is known into the field of its monopoly and diminishes the resources available to skillful men. This patentee has added nothing to the total stock of knowledge, that has merely brought together segments of prior art and claims them in congregation as a monopoly." 340 U.S. 147, 152, 153

Accordingly this rule as applied in *A. & P.* and reaffirmed by *Graham,* was not applied by the Third Circuit which held that the admitted back-pressure in Wiedmann became invention when used substantially for the same function in a plastic injection device for providing a back-pressure on the plastic.

Petitioner's Expert Did Not Hail Willert's Invention

The Court of Appeals stated in its opinion that even Petitioner's expert hailed the Willert invention as a break-through in the particular field. It is clear error even to assume that Petitioner's expert praised the alleged Willert's invention; and the publication by Leslie J. Kovach, Vice-President of Petitioner, *does not mention Willert at all.*

This is brought out in Appendix E where the actual publication of Kovach is set opposite the footnote added by the Court of Appeals to its opinion.

Respondents Sell the Egan Machine Under the Patent in Suit, Though the Willert Patent Is Not Incorporated in the Egan Machine.

The District Court stated the following Findings of Facts in its opinion (pp. 51, 52):

1. "The Egan machine does *not* have means for selectively opening and closing the forward end of the passage, has *no* limit switch, but does have *a time delay in conjunction with a limit switch which is supplied upon conversion of the machine, by customers themselves*".
2. "The Willert patent *does not* teach delay".
3. "There is nothing in the Willert patent which provides for *stopping* the operation of the cycle. The Willert patent teaches that the reciprocating screw rotates *continuously*".
4. "Egan sought protection for the machine, which it manufactured, by selling it under the Willert patent".

In spite of these Findings of Facts by the District Court, the Court of Appeals for the Third Circuit found commercial success by the Willert patent, possibly because patentee forced 17 licensees into an agreement as Respondents attempted also with Petitioner. It was clear error by the Court of Appeals to assign commercial success to the Willert patent, since Willert had built only one experimental machine, which turned out to be a failure.

All Structural Features of the Willert Patent Disclosed in Prior Art

It is one of the Findings of Fact by Judge Wortendyke; as stated in the District Court opinion (App. A, p. 46) that

> "I find as a fact, *and it is conceded by the Plaintiffs*, that each of the structural features of the Willert patent is disclosed in the prior art."

In addition, Willert himself failed to disclose the meaning of the word "forcibly" as such in conjunction with the word "yieldingly" in the critical clause of each of the claims relied upon. Judge Wortendyke stated in this connection as follows:

> "Accordingly, says the defendant [Petitioner herein] if *Willert himself does not know what his invention is* and what 'forcibly' stands for, the claims in question are hopelessly invalid. Defendant properly states that *the public is entitled to know from reading the claims* (to which we add the specifications) 'where the scope of the protection ends in the Willert invention.'" (Emphasis added.)

If for no other reason, the statement made by Judge Wortendyke (App. A, p. 51) calls clearly for a reversal of the Judgment by the Court of Appeals, namely:

> "It has been recognized since Knapp v. Morss, 150 U.S. 221, 14 S. Ct. 81, 37 L. Ed. 1059, decided in 1893, that patentable invention consists in the embodiment of *new and useful means* to achieve a desired result and not in the *functions attributed* to the means. General Radio Company v. Superior Electric Company, 321 F.2d 857, 862 (3rd Cir. 1963) cert. denied 376 U.S. 973 (1964)." (Emphasis supplied.)

Conclusion

In conclusion, it is respectfully submitted that it is important to litigants, and beyond that the entire plastic machine industry, to have the questions of patent validity determined according to uniform decisions of this Hon. Court. It is important that the patent statutes be interpreted properly and that patentability be determined in accordance with the statutes and by some test or standard having requirements that are not outside of the statute or that have been eliminated by the statute. If the statutes are applied properly, this Hon. Court will find that the patent in suit does *not* meet the test of invention.

There was a clear finding by the District Court that the prior art device anticipated the patent in suit, and

that the prior art had the same action. Undoubtedly by improper application of the rules taught by the *Graham* cases, *supra,* the Court of Appeals for the Third Circuit arrived at the wrong legal conclusion.

The Court of Appeals went further, disregarding Rule 52 of the Federal Rules of Civil Procedure and the District Court's findings regarding the fact that the prior art structures were like the patent structure. They held that the application of "adjustable back pressure" in connection with plasticizing of plastic material amounts to invention in spite of Respondents' admission that such expedient was known then to the designer of plastic machinery.

To preserve the security under the law regarding patents that should be afforded by the decision of this Court, is of vast importance *to the entire* public, but particularly to all manufacturers of, dealers in, and users of machines, devices and commodities which are or may be covered by patents.

It is, therefore, respectfully submitted that this case is one calling for the exercise by this Court of its supervisory powers in order that conflict of decisions of a Federal question by the United States Court of Appeals for the Third Circuit may be removed, in order that important questions of Federal Law decided by the United States Court of Appeals for the Third Circuit may be settled by this Hon. Court, and to such an end a writ of certiorari should be granted, and this Hon. Court should review the decision of the United States Court of Appeals for the Third Circuit and finally reverse said decision and restore the decision of the District Court.

Respectfully submitted,

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APPENDIX A

Opinion

UNITED STATES DISTRICT COURT

DISTRICT OF NEW JERSEY

Civil Action No. 274-64

FRANK W. EGAN & COMPANY and
WILLIAM H. WILLERT,

Plaintiffs,

vs.

MODERN PLASTIC MACHINERY CORP.,

Defendant.

APPEARANCES:

TONER, CROWLEY, WOELPER & VANDERBILT, Esqs., By John A. Ackerman, Esq.

FISH, RICHARDSON & NEAVE, Esqs., By William K. Kerr, Esq., and David M. Plant, Esq. (New York Bar), Attorneys for Plaintiffs.

HARRY SOMMERS, Esq., By Ernest Montague, Esq. (New York Bar), Attorney for Defendant.

WORTENDYKE, District Judge:

In this action plaintiffs, Frank W. Egan & Company (hereinafter Egan) and William H. Willert (hereinafter Willert) charge the defendant, Modern Plastic Machinery Corp. (hereinafter MPM), with infringement of Claims 1 and 4 of United States Patent No. 2734226 (hereinafter

Willert patent), issued to Willert on February 14, 1956, on application filed March 5, 1952. Egan is the exclusive licensee of Willert under the patent. Egan is a New Jersey corporation, and Willert is a citizen of that State. MPM is a Delaware corporation, having its principal place of business in New Jersey, and is charged with infringement of the patent in suit by importing infringing plastics injection molding units and machines built in Germany, and selling and installing them in the United States.

MPM denies both the validity, and infringement, of Claims 1 and 4 of the patent in suit.

Jurisdiction and the appropriateness of venue are conceded, 35 U.S.C. § 281; 28 U.S.C. §§ 1338(a) and 1400(b).

Background of the Patent

A plastics injection molding machine consists of two basic units: the injection unit, to which the Willert invention relates, and the mold into which the plastic material is injected. The injection unit includes a feed hopper, a plasticizing and injection chamber and appurtenant control and power equipment. Plastics resin in pellet form is introduced through the feed hopper into the plasticizing chamber where it is melted and homogenized, and thence fed into the injection chamber. Subsequently, a quantity of the melted and homogenized resin is forcibly injected from the injection chamber into the mold. After completion of the injection, more plasticized resin is fed to the injection chamber in readiness for the next injection into the mold.

Since the 1930's, builders of plastics injection molding machines have endeavored to design a machine which would produce at a high rate of output a thermally stable melted resin having a uniform temperature and viscosity. However, for many years the sole means employed to attain this goal was the application of heat to the outside of

the plasticizing chamber. This means proved inadequate because the resin near the walls of the chamber would be too hot by the time the center of the plastics resin had heated sufficiently. The development of improved resins, and of new resins having properties which made them attractive for various end uses, merely increased the problems of attaining uniform temperature and viscosity. In addition, these new and improved resins were difficult to plasticize and to mold. It became clear that the key to successful molding was the proper plasticization of the resin to be molded, and that such proper plasticization could not be achieved unless improvements were made in the design of the injection cylinder. In 1948, prior to Willert's apparatus, there were approximately 4,000 plastics injection molding machines in operation in the United States. There were 15 domestic manufacturers of such equipment, and manufacturers in England, Germany, Switzerland, and Italy. Against this background, the patent in suit is considered.

Prior Art

A patent search obtained by Willert's attorney disclosed only U.S. Patent 2,359,839 issued to Goessling on October 10, 1944, on application dated December 21, 1942. This patent, with other prior art patents, was cited by the Patent Office in the patent in suit. Goessling's teaching related to machines for injection molding of plastics and to the mechanism for forcing heat-softened plastic material from an injection cylinder into a mold by means of a ram reciprocable in a cylinder. The principal object of the Goessling invention was to increase the plasticizing speed and capacity of the injection cylinder without lengthening the stroke of the ram, without loss of injection pressure, and without increasing the power required to operate the ram. There are many features of the Goessling machine

which are disclosed in that of Willert. For example, a fluid-actuated piston for reciprocating an injection ram or plunger; the piston being actuated by fluid pressure supplied to the cylinder through a port at each of the opposite ends thereof. In Goessling, as in the Willert patent, there is mounted, for rotary movement in the axial bore of the injection cylinder, a shaft continuously rotated. The shaft in Goessling is tubular, while that in the Willert patent is solid. In each of the machines, a granular or powdered molding compound is supplied to the annular space between the shaft and the wall of the bore of the cylinder in which it rotates from a feed hopper above and through an opening in the wall of the cylinder. The forward end of the rotating tubular shaft in Goessling has an external helical screw formed upon its circumference with a snug working fit in the bore of the cylinder. The ram in Goessling, which is reciprocable horizontally, moves within the axial bore of the tubular shaft and is tapered at the end toward the mold to provide continuous communication between the annular space surrounding the screw and the smaller ram-receiving end portions of the bore of the tubular shaft. The injection cylinder is heated, according to the Goessling specification, preferably by means of one or more electric band heaters which fit around the cylinder between the inlet opening and the discharge nozzle. The Goessling specification describes the operation of his device, in part, as follows:

> "Molding material flows from the feed hopper through the inlet opening in the heated injection cylinder into the annular space therein where it is engaged by the continuously rotating feed screw and is forced thereby between the tapered end of the tubular shaft and the tapered intermediate portion of the bore of the cylinder into the reduced outer end portion of said bore. During this forward movement of the mold-

ing material, the material is thoroughly mixed and uniformly heated to form a plastic or fluid mass, which fills the reduced forward end portion of the bore of the injection cylinder and the space left in the forward end portion of the bore in the continuously rotating shaft when the ram is retracted. When it is desired to fill the mold, the mold is moved into contact with the outer end of the discharge valve to place the discharge passageway thereof into communication with the entrance or gate of said mold, and fluid is admitted to the rear end of the plunger or ram actuating cylinder to force the ram forward. As the ram moves forward it enters the reduced forward end portion of the bore around the spreader and outwardly through the outlet passageway of the injection nozzle and through the discharge passageway of the valve into the mold. The piston is then moved rearwardly to retract the ram and the mold moves away from the valve permitting * * * [the valve] to close. In accordance with common practice, automatic controls (not shown) are provided so that the mold and ram are operated in proper timed relation and in repeated cycles."

Among the advantages which Goessling alleges are afforded by his device, he cites: increase in quantity of material plasticized in a given length of time without increasing the stroke of the injection ram; possibility of increase in diameter of cylinder without loss of injection pressure and without increase in power required to operate the ram; functioning of helical feed screw as conveyor to move the molding material forward in the injection chamber, exertion of relatively high continuous pressure on the material regardless of the position of the ram; thorough mixing of material and assurance of more uniform heating thereof; and elimination of devices previously employed to supply cylinder with accurately timed and measured charges of

molding compound. The obvious principal difference between the Goessling device and that of Willert is found in the fact that Goessling injects the plastic material by means of a plunger reciprocated axially through a tubular rotating screw which feeds the material from the hopper into the injection cylinder, while Willert uses his feed screw as plunger to inject the accumulated plasticized material into the mold. Would it be obvious to a mechanic familiar with the structure and operation of the Goessling device to substitute for Goessling's ram, reciprocating through his tubular feed screw, a reciprocating feed screw serving to inject as well as to feed? For reasons which I shall hereafter indicate, the answer to this question must be in the affirmative. Indeed, at the end of his specification, Goessling anticipates obvious modifications of his machine in the following language:

> "Obviously, the hereinbefore described injection molding machine admits of considerable modification without departing from the invention. Therefore, I do not wish to be limited to the precise arrangements shown and described."

Similarly, Willert contemplated variations in the details of his alleged invention by terminating his specification with the following language:

> "Whereas for purposes of illustration I have shown and described a preferred embodiment of the apparatus for plasticizing and delivering plastic material of the invention, particularly when it is employed in an injection molding machine, it is to be understood that such embodiment is illustrative only and that the invention is capable of considerable variation as to details."

U. S. Patent 2,402,805 (hereinafter Cousino '805) and 2,471,813 (hereinafter Cousino '813) issued respectively to

Cousino on June 25, 1946 and May 31, 1949, relate to improved injection molding apparatus for continuously injecting, under pressure, thermoplastic materials into a mold or through an extrusion die. Claim 2 of Cousino '805 discloses an "apparatus for injecting heat curing plastic compound into a mold having an inlet opening comprising an injecting unit including a discharge nozzle and pressure creating means for forcing plastic compound through said nozzle under pressure, said injecting unit including driving mechanism for said pressure creating means, means shiftably mounting said injecting unit for bringing said nozzle into and out of mold filling engagement with respect to said mold inlet opening, said injecting unit being shiftable under *back pressure applied thereon by said plastic compound when said mold is filled, and a control system for said driving mechanism, including a member responsive to movement of said injecting unit by said back pressure for discontinuing operation of said pressure creating means when said mold is filled.*" (Emphasis supplied) The stated objects of Cousino '813 include the provisions of a reversably driveable pressure-creating mechanism having improved valve means for interrupting the flow of material from the nozzle at the end of a discharge operation, and a shiftable screw member in the pressure-creating unit having an end portion fashioned to serve as a valve for obstructing unintended flow of material from the nozzle, as well as back-flow of material from the mold with which the nozzle is associated in operation. The disclosed device in that patent also provided a resilient means for yieldably urging the shiftable screw toward its valve closing position, adapted to accommodate shifting of the screw in a reverse, valve opening direction, under the action of the pressure created thereby on the material being injected.

U. S. Patent 2,493,805, issued January 10, 1950 to Dinzl, and cited in the application file of the patent in suit, also disclosed an improvement upon the conventional type of

injection molding machine in which a charge of granular molding material is forced through a heated injection cylinder under high pressure by a plunger to plasticize the material and deliver it to a mold where it is maintained under high pressure over a period of time, after which the plunger is retracted and the material in the mold allowed to cool while the plunger remains at rest, and an additional charge of material is fed to the injection cylinder. The specifications of Dinzl state that the plunger is operated hydraulically, and pumping equipment is employed to develop the hydraulic pressure required for its operation. The pumping equipment is actually made use of only during the injection and retraction strokes of the plunger, but operates continuously. Claim 1 of Dinzl's improvement patent describes an injection cylinder having a nozzle at one end, a plunger reciprocable in said injection cylinder, and a reciprocating hydraulic system. The claim defines the reciprocating hydraulic system as "a source of hydraulic fluid under pressure, means for utilizing said hydraulic fluid to force said injection plunger toward the injection cylinder nozzle, means biasing the injection plunger against return movement after completion of the injection stroke, means effective upon completion of the injection stroke of the injection plunger to utilize said hydraulic fluid to effect reciprocation of the filling plunger thereby introducing plasticized molding material into said injection cylinder and causing return of the injection plunger *under pressure exerted by the introduced molding material,* and means effective upon completion of the return of the injection plunger to discontinue reciprocation of said filling plunger, and lock the same against movement." (Emphasis supplied) A self-closing limit switch is opened by the plunger at the limit of its retraction stroke. A self-opening limit switch and a self-closing limit switch are actuated by the piston of the hydraulic motor. These switches are so arranged

that the self-opening switch is closed by the piston at the end of its forward stroke and the self-closing switch is opened by the piston at the end of its retraction stroke.

The plastic molding apparatus described by Willcox in his application filed October 27, 1950 for Patent 2,629,132 (hereinafter Willcox), issued February 24, 1953, received thermoplastic material fed from a hopper, heated the material, and extruded or injected the material into a mold. The specification pointed up, among the disadvantages of prior art devices, the difficulty in attaining temperature control over various parts of the apparatus in order to achieve adequate plasticizing without overheating and burning, and to avoid material buildup in, or clogging of, the injection apparatus. A further difficulty was said to have been encountered in the prior art in effecting an adequate plasticizing of the material and in eliminating trapped air from the molded product. Willcox taught "an apparatus for plasticizing and feeding thermoplastic material comprising a plasticizing head defining an elongated passage, a cylindrical bushing at the forward end of said passage, inlet means for introducing thermoplastic material into said passage near the other end thereof, an elongated member received within said passage, and including an intermediate threaded portion, the forward and rearward ends of said elongated member being unthreaded, with a portion of the unthreaded rearward end extending into said passage adjacent said inlet means * * *, means supporting said member for rotation and reciprocating movement with respect to said head to move said material along said passage under the action of said threaded portion and to eject the material from the forward end of said passage upon longitudinal movement of said member, * * *."

In addition to the foregoing prior art patents, there was cited by the Patent Office in the Willert application

proceedings an Italian patent No. 420839 (hereinafter Italian patent), issued March 9, 1947 to Quillery, disclosing apparatus for the manufacture of molded rubber objects. That apparatus is described in claim 5 of the Italian patent as an injection press for the manufacture of molded rubber objects by introducing, by injection under pressure, a rubber mix into a mold which has been previously closed and maintained at a high vulcanization temperature. The apparatus comprises heating plates making it possible to maintain the mold closed during the injection at a high temperature, and an injection container combined with a piston preferably cooperating with a heating system. The injection piston consists of a rotatable screw within a cylinder, and is "movable parallel to itself so as to force into the mold the mixture which has passed through said screw." The Italian patent, as translated, explains that "[D]uring its introduction, the mix is mixed and subdivided especially by its passage through the plate 23 and then, thus freed of the occluded air, it undergoes an ultra-rapid vulcanization in the mold." The effect of the "mix" upon the longitudinal movement of the "screw" is described as follows: "It will be understood that the rubber mix introduced into the opening 36 is subdivided by the screw 35 and is accumulated, during the period of time between two injections in the lower part of the container 16, which results in the lifting of said screw at the same time as the lifting of the piston 29. At the moment when the chamber 28 is placed under pressure, the mix which has thus been heaped together is in sufficient quantity and the piston 29 moves the screw 35 downward, exerting the same effect as the piston 25 in Fig. 1, namely pushes the said mixture through the plate 23 from where it passes into the conduit 18 and effects the injection, as has been described when discussing the first embodiment, of a mix which is freed of occluded air." It should be observed that the

screw 35 and piston 29 are disposed vertically in succession above the opening 36 in the Italian patent drawings.

In addition to the prior art cited by the Patent Office, defendant cites a German patent application No. 176425 Xii 39a,[1] dated December 15, 1943, by I. G. Farbenindustrie Aktiengesellschaft, describing an injection molding machine for thermoplastics, consisting of an injection cylinder within the bore of which is a continuously rotating screw which conveys the composition charged through a filling opening in the cylinder wall toward a nozzle at the end of the cylinder into a mold. The injection cylinder is externally heated. The molding composition, after leaving the conveyor screw, passes into a space within the cylinder in front of the screw where it is mixed to equalize temperature differences in the composition, and thence passes into the front portion of the injection cylinder where it collects periodically and whence it can be injected into the mold as required. The injection is effected by bringing the mold against a movable section of the injection cylinder causing that part to slide to the right against a stop and thus forcing the accumulated "shot" of plasticized material to emerge from the nozzle and pass into the mold (much as tooth-paste is forced out of its tube by folding or squeezing the tube). After the completion of the injection, the movable section of the cylinder is forced back, i.e., to the left, into its initial position by the composition which has been conveyed forward in the meantime. In another embodiment of the Beck device the change in the shot capacity of the injection cylinder is effected by an axial displacement of the rotating screw whose support is made axially movable and is displaced by a sufficient force in the filling direction upon the commencement of the injection process.

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[1] A copy of which, in the collections of the United States Library of Congress, became available to the public on July 11, 1947.

The rearward movement is effected automatically by the composition which is continuously conveyed into the free cavity of the cylinder.

In an article in Kunststoffe, entitled "Increasing the Capacity of Injection Molding Machines by Preplasticizing", published in German in 1951, Beck describes a preplasticizing machine manufactured by Hydraulic Press Manufacturing Co. (HPM) which "uses the [feed] screw directly as *injection plunger* so that * * * the plasticizing screw can be operated continuously * * * [and] makes it possible to color the compound homogeneously at the same time directly in the machine so that the dry coloring method * * * can be dispensed with as an additional operation, and * * * homogeneous colorings can also be obtained." (Emphasis supplied)

The references, upon which MPM relies for support of its contentions that the Willert device did not amount to invention, were disclosed in the prior art. There were six patents and one patent application in the plastics injection molding machine field. There were three other references: the Wiedmann patent and the Tyler patent in regard to hydraulic systems and devices; the Vorraber patent, which disclosed an apparatus for the manufacture of artificial stones and bricks, but introduced by defendant in an attempt to show that it taught elements of the Willert claims. The alleged inventor was chargeable with knowledge thereof. *Zero Mfg. Co.* v. *Mississippi Milk Producers Ass'n.*, 232 F.Supp. 720, 724 (S.D. Miss. 1964) aff'd. 358 F.2d 853 (5th Cir. 1966) cert. filed August 4, 1966. The references which relate to plastic molding disclose features of the Willert device which, in combination, perform functions similar to those performed by them in the Willert combination. For convenience in relating the elements of the Willert device to corresponding elements disclosed in the prior art references, MPM has set forth in its post-

trial brief, in parallel columns, each of the Willert elements and the allegedly corresponding prior art references.[2] This convenient presentation of the features of the claims in suit as compared with the disclosures of the prior art references is as follows:

Willert Device	*Prior Art Disclosures*
A plastic material plasticizing and delivering mechanism comprising	
(a) a barrel having a passage extending longitudinally therein.	Cousino 2,471,813 (D-9), Goessling (D-13), Vorraber (D-12), Cousino 2,402,805 (D-6), Willcox (D-7), Italian patent (D-5).
(b) a rotatable and reciprocable screw for feeding plastic material toward the forward end of the screw.	Cousino 2,471,813 (D-9), Goessling (D-13), Vorraber (D-12), Willcox (D-7), Italian patent (D-5).
(c) means for feeding plastic material between the screw and the wall of the passage at a point spaced from the forward end of the screw.	Goessling (D-13), Vorraber (D-12), Willcox (D-7), Italian patent (D-5).
(d) means selectively opening and closing the forward end of the passage.	Cousino 2,471,813 (D-9), Vorraber (D-12), Cousino 2,402,805 (D-6), Willcox (D-7).
(e) means for rotating the screw.	Cousino 2,471,813 (D-9), Goessling (D-13), Vorraber (D-12), Cousino 2,402,805 (D-6), Willcox (D-7), Italian patent (D-5).

[2] Defendant's Post-Trial Brief, page 19.

Appendix A

Willert Device	*Prior Art Disclosures*
(f) means for selectively forcibly but yieldingly opposing reciprocation of the screw in the passage in a rearward direction.	Cousino 2,471,813 (D-9), Goessling (D-13), Tyler (D-10), Widemann (D-8), Vorraber (D-12), Willcox (D-7), Italian patent (D-5).
(g) and means responsive to a pre-determined length of travel of the screw in a rearward direction for positively thrusting the screw in the passage in a forward direction to feed the plasticized material out the forward end of the barrel.	Vorraber (D-12), Dinzl (D-11).

PATENT IN SUIT

Willert, the inventor named in the patent, had been employed by MPM in 1948 and 1949; performing technical service work consisting of setting up MPM's plastic extruder machines and doing detail work in its engineering department. In April 1950, he became an assistant to the General Manager of Hartig Engine & Machine Co. (Hartig). Hartig was then engaged in the manufacture of extrusion machinery and auxiliary take-off equipment. From that employment, Willert transferred to Egan in August 1952. It was during his employment at Hartig, in March 1952, that the first application for the patent in suit was filed. Willert described the embodiment of his apparatus as "an in-line reciprocating screw plasticizer with adjustable back pressure used for injection molding of thermoplastic materials." He explained that the means for controlling the amount of material plasticized and injected into the mold consisted of "the travel of the screw

in a rearward direction that is controlled so that the plastic charge in front of it [the screw] is accumulated, • • • to what you want to shoot in the mold." The idea of a reciprocating screw occurred to him in 1950, in consequence of hearing a lecture on a plasticizing unit at a meeting of the Newark (New Jersey) section of the Society of Plastic Engineers. The unit described in the lecture employed a two-stage plunger system, by which the material was plasticized in the first stage, and accumulated as a charge and forced into the mold in the second stage. That process suggested to Willert that if he could combine the plasticizing action of an extruder with the action of an injection molding machine, he would achieve a superior device for the accomplishment of injection molding. He accordingly consulted patent counsel for whom he prepared in August 1951, a written description of his idea together with an illustrative schematic drawing. That document, Exhibit P-14, described and illustrated his disclosure of the function and cycle of performance of his extrusion-injection cylinder. The following language is quoted from that exhibit:

> "The prepared thermoplastic compound • • • granules, are placed in hopper (1). It falls or is fed to the extrusion screw (2). The material is forced forward in [leftward] direction (A) by the motion of the screw. The screw is turning in a clockwise direction at all times • • • by the torque applied at (3) by an external motor • • •. The cycle begins with the screw in the most forward position direction A or that allowed by the accumulating cylinder or reservoir (4). In this position the reservoir is completely filled by the screw. As the material is conveyed down the extrusion cylinder (5) which is externally heated by electrical heaters (6) (but not limited to this method) it is softened. The amount of softening or plasticiza-

tion is determined by the degree of heat, rpm of the screw, and pressure. All these factors would be controllable on a production unit. As the plastic moves forward pressure is increased in the reservoir (4) with the cut-off valve (7) closed so as not to allow material to move beyond it. This causes a thrust in [rightward] direction 'B' on the screw. This thrust load is taken up by the bearing and housing assembly (8). Behind this housing is so located a hydraulic or injection cylinder (9). By controlling the pressure on each side of the piston, it is possible to control the load [sic] the screw is allowed to retreat in direction (B). The amount of load will be determined by the pressure needed to produce a solid mass of homogeneous and thoroughly plasticized compound free of air or voids in the reservoir (4). The screw is allowed to retreat a distant [sic] equivalent to produce a reservoir ahead of the screw in volume equal to or slightly greater than that needed for the cavity of the die (not shown). When the above is accomplished and the mold (not shown) is in position the cut-off valve is opened. At the same time, the screw is forced forward, direction A, by the hydraulic injection cylinder. The now plasticized material collected ahead of the screw is forced forward thru the nozzle (10) and into the die. The construction, movement, cycling, and fitting of the die is the same procedure used on the conventional units. Should the capacity of the reservoir be less than that of the die, the valve could remain open and the screw continue to feed hot material into the mold. When the proper pressure is built up to completely fill the mold, the valve closes and the unit goes thru the same cycle as described above. • • •"

Willert caused an injection unit to be designed and built in accordance with his ideas, and this device was tested

on, or shortly prior to, May 17, 1954. The testimony indicates that the operation of the machine was very encouraging although it failed to mold an acceptable part because of some mechanical difficulty and excessive heat in the extrusion cylinder. During that test, "back pressure" was employed on the device but, for lack of a pressure gauge, the pressure at which the screw was allowed to retreat was a matter of guesswork. The manufacturer of Willert's device, Reed-Prentice Corporation, ultimately lost interest in this machine because of mechanical difficulties encountered. Thereafter, Egan sought, and obtained, an exclusive license under the patent in suit, which had issued in the meantime.

The alleged novel features of the combination described in the claims relied upon were characterized by the plaintiffs at the pretrial conference as "* * * an improvement in an injection molding machine of the type in which a rotating reciprocating screw is used to plasticize and to inject plasticized material. The improvement covered by the claims is found in the specific arrangement in which a charge of molten plastic of a pre-determined size is accumulated at the front of the screw and in which the charge * * * as it accumulates forces the screw backward against an adjustable back pressure. * * * [T]he screw takes pellets of plastic material, plasticizes them, [and] moves them forward to a position in front of the screw [thus] creating a reservoir of molten plastic material at the front end of the barrel in front of the screw [.] [A]s the molten plastic material accumulates at the front of the [reciprocating rotating] screw it forces the screw backwards against an adjustable back pressure. When the screw reaches a predetermined position during its travel backwardly or rearwardly it is then thrust forward to inject the molten plastic material into the mold.'"

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[1] See transcript of pretrial conference of April 8, 1965 at pages 2-3.

Appendix A

In support of its denial of the validity of the claims of the patent here relied upon, MPM contends that (1) the Commissioner failed to cause a proper examination of the prior art to be made; (2) that Willert was not the original inventor; (3) that the claims relied upon fail to disclose novelty in the light of the prior art; (4) the device described in the claims relied upon would have been obvious to a person skilled in the prior art; (5) plaintiffs are estopped by the application file wrapper; (6) there were false representations made by the inventor to the Patent Office during the prosecution of the application; (7) the alleged inventive features are anticipated in the prior art.

With respect to "controlling back pressure" in the injection unit of the Willert device, plaintiffs contend that "the rotating screw simultaneously plasticizes and moves the resin fed to it from the hopper toward the forward end of the screw" and "by accumulation of the plasticized charge in the barrel in front of the screw causes the screw to move rearwardly. This rearward movement of the screw is opposed by a constant, selected hydraulic force, or 'back pressure'. Selection of a back pressure which is appropriate for the resin being molded produces superior mechanical working of the resin and in turn the proper plasticization, homogenization, and degassing of the plastic material."

Plaintiffs concede that Claims 1 and 4, upon which they rely, are practically identical, and disclose "a plastic material plasticizing and delivering mechanism comprising (a) a barrel having a passage extending longitudinally therein; (b) a rotatable and reciprocable screw for feeding plastic material toward the forward end of the screw; (c) means for feeding plastic material between the screw and the wall of the passage at a point spaced from the forward end of the screw; (d) means selectively opening

and closing of the forward end of the passage; (e) means for rotating the screw; (f) means for selectively forcibly but yieldingly opposing reciprocation of the screw in the passage in a rearward direction; (g) means responsive to a predetermined length of travel of the screw in a rearward direction for positively thrusting the screw in the passage in a forward direction to feed the plasticized material out the forward end of the barrel." Plaintiffs do not contend that any of the foregoing structural elements of the Willert patent are new. They do assert, however, that "Willert's combination of these old elements produced for the first time an in-line reciprocating screw injection molding unit *in which the size of each successive shot can be simply and accurately controlled, and in which an appropriate pressure for resisting rearward movement of the reciprocating screw can be conveniently selected and fixed.*" (Emphasis supplied) In short, plaintiffs state that "the crux of the Willert invention is this adjustable back pressure which resists the rearward movement of the screw."

As initially filed in the Patent Office on March 5, 1952, Willert's application contained 12 claims, all of which were rejected by the Examiner as unpatentable over the Italian patent, in view of Cousino '805. In his letter of rejection of the application, the Examiner pointed out that the Italian patent "shows a rotatable, reciprocable screw * * *, means for rotating the screw * * *, and means for opposing backward movement to (sic) the screw and for thrusting the screw forward * * *. Cousino shows the use of a valve in an injection nozzle. No invention is seen in mounting a valve such as that shown by Cousino in the injection nozzle of the Italian patent. Any other features which the claims recite, i.e., control mechanism, are held to be *mere matters of design* over the references. The *functional statements* contained in the claims *do not lend patentability to the*

claims" (Emphasis supplied). Responsive to this rejection, the applicant amended his twelve claims as filed, and added thereto a thirteenth claim. Insofar as the claims (1 and 4) presently relied upon by plaintiffs are concerned, each was amended by inserting therein, following the word "selectively", the words "forcibly but" in the phrase "means for selectively yieldingly opposing reciprocation of the screw in the passage in a rearward direction, * * *". Thus, the phrase, as amended in the claims of the patent as issued, reads "means for selectively forcibly but yieldingly opposing reciprocation of the screw in the passage in a rearward direction." Upon this phrase, as so amended by conjoining the adverbs "forcibly" and "yieldingly" to describe the opposition to the rearward reciprocation of the screw, the asserted validity of the patent in suit depends. The thirteen claims of the application as amended were again rejected by the Examiner in his letter mailed to applicant's attorney on December 15, 1953. After citing, as additional references, Dinzl and Willcox, the letter rejected Willert's claim 1 as unpatentable "over the Italian patent" and rejected claims 2-13 as unpatentable "over the Italian patent in view of Cousino alone or with the addition of Dinzl." The Examiner held, with respect to claim 1, that "the gravitational force opposing reciprocation of the screw of the Italian patent is the equivalent of applicant's 'means for forcibly but yieldingly opposing the reciprocation of the screw.'" Regarding claims 2-13, the rejection letter states:

> "The Italian patent shows the general structure set forth. No invention is seen in adding a valve such as shown by Cousino to the apparatus of the Italian patent. In regard to control means specified in the claims, it is held that it would not amount to invention to operate the apparatus of the Italian patent automatically. * * * Since the screw is the only moving

part of the apparatus of the Italian patent which indicates when the proper amount of material has been charged to the injection chamber, it would be obvious to use movement of the screw to control the automatic operation of the injection ram. This is particularly true since Dinzl discloses the actuation of a switch to actuate a control circuit, which actuation is caused by rearward movement of the injection ram. Therefore no invention is seen in controlling the operation of the apparatus of the Italian patent automatically, the control means being responsive to the rearward movement of the screw."

Upon notification of this second rejection of his application, Willert requested that his claims numbered 1, 3, 4, 7 and 10 be cancelled, and that two claims, numbered 14 and 15, be added to his application. This left claims 2, 5, 6, 8, 9 and 11-15 in the application as of June 11, 1954. Upon further written argument by the attorney for the applicant, these claims were allowed on September 8, 1955, without further comment by the Patent Office. They became claims 1-10 inclusive of the patent, which issued February 14, 1956. In support of his application amendment of June 11, 1954, Willert's attorney contended, in part, as follows:

"The structure of the Italian patent does not include 'means for forcibly but yieldingly opposing reciprocation of the screw.' Quite plainly the force of gravity is not a means; there is no mechanism in the Italian patent which can be interpreted in any warranted manner as responding to such means. The Italian patent does not show any means for selectively opening and closing the delivery end of the passage, nor does it show any means responsive to a predetermined length of retreating motion of the feed screw either to open the path of communication between the mecha-

nism and the mold for positively thrusting the screw in a forward direction to feed the plasticized material out the forward end of the barrel and into the mold, or to effect the combination of such results. It is contended, therefore, that the Italian patent plainly lacks a teaching of the combination set forth in the claims directed to the plasticizing and delivering mechanism, as well as the claims drawn to the injection molding apparatus * * *. It has been found, in the use of applicant's apparatus, that an opposing force far in excess of that which would be exerted by gravity on the movable parts, if the apparatus were disposed vertically, is necessary to produce satisfactory molded objects. Thus, the Italian patent by itself does not supply an answer to applicant's problem [air bubbles in the plastic material collected in the forward chamber resulting in porosity of the molded article] * * *."

Applicant further argued that a combination of the teachings of the Italian patent with those of Cousino '805, or with those of Cousino '805 and Dinzl, is unwarranted because of lack of a reference showing the basic combination claimed of the differently operating devices disclosed by the respective patents referred to. Thus, from the time of his first amendment of his application, Willert consistently, and with ultimate success in the Patent Office, maintained that the embodiment in a reciprocating, rotatable screw plasticizer of "means for controlling back pressure and controlling the shot size", producing "a properly homogenized and melted [predeterminable] amount of plastic" amounted to invention over the prior art. The defense of file wrapper estoppel, urged at the pretrial conference, is apparently, and will be treated as, abandoned.

The evidence fails to support defendant's contention that Willert made false representations to the Patent Of-

fice during the prosecution of, and with respect to, the application. If such contention is predicated upon the conceded error in the description of the operation of certain valves in the hydraulic reciprocation system of the Willert device, I reject the contention in the light of the law and the facts. The operation which was intended, despite the discrepancies in the specifications, was obvious to plaintiffs' expert, Egan, and to defendant's expert, Goldberg, and enabled MPM to construct and demonstrate to the Court an operable machine in accordance with the intended Willert specification. It is sufficient if the claims, read in the light of the specifications, reasonably apprise those skilled in the art both of the utilization and scope of the invention. *Georgia-Pacific Corp.* v. *United States Plywood Corp.*, 258 F.2d 124, 136 (2nd Cir. 1958) cert. denied 358 U.S. 884 (1958), cited with approval in *Jones Knitting Corp.* v. *Morgan*, 361 F.2d 451, 454 (3rd Cir. 1966).

The essential elements of each of the two claims relied upon are stated in each in identical language, viz.:

> "* * * means selectively opening and closing the forward end of the passage, means for rotating the screw, means for selectively forcibly but yieldingly opposing reciprocation of the screw in the passage in a rearward direction, and means responsive to a predetermined length of travel of the screw in a rearward direction for positively thrusting the screw in the passage in a forward direction to feed the plasticized material out the forward end of the barrel."

As MPM correctly points out in its post-trial brief, the Willert device comprises two basic elements, viz.: a barrel having a reciprocating screw whose continuous rotation feeds plastic material into a reservoir and mold, and a hydraulic system by means of which the injection and retraction strokes of the screw are impelled. Both of these

features were old in the art, particularly the control means of the hydraulic system, which include the opening and closing of the valve between the reservoir and the mold in operating relationship with the valves which control the reciprocation of the piston in the hydraulic cylinder. Commencing with line 33 in column 4 of the specifications of the patent in suit, we learn that "a shut-off valve 80 is provided in the bore through the nozzle portion, such valve being operated by the hydraulic cylinder 82 *in a conventional manner.* (Emphasis supplied) When the entire unit 16 has been thrust to the left * * *, the forward end of the nozzle sealingly contacts the outer end of the passage 84 in the mold part 12, as diagrammatically indicated in Fig. 2. When this occurs, the mold parts 12 and 14 will have been forcibly clamped together so that plastic material may be injected by the rotating and reciprocating feed screw 36 upon the opening of valve 80 and upon the thrusting of the feed screw toward the mold." It will be noted that the means for clamping the mold parts together are not specifically described or claimed as part of the invention. Such means were old in the art and so recognized in the Goessling patent. In the Goessling application of December 21, 1942, column 2 line 55 of the specification states: "*In accordance with common practice,* automatic controls (not shown) are provided so that the mold and ram are operated in proper timed relation and in repeated cycles." (Emphasis supplied) Willert describes a typical operating cycle of his apparatus as follows:[4] "With the [cut-off] valve 80 opened, the plasticized resin is allowed to emerge from the nozzle * * *. Valve 80, the cylinder 82 of which is controlled by a suitable solenoid operated valve 112, is now closed, thereby stopping the flow of plasticized material from the nozzle. [The granulated plastic com-

[4] Specifications, column 5, line 47 through column 6, line 31.

pound is flowing through the throat of the hopper and being forced forward in the barrel by the continuously rotating screw.] * * * By the time the thermoplastic material * * * reaches the end of the screw it is thoroughly plasticized, by reason of its continually being worked between the screw and the bore of the barrel and its subjection to heat within the heated barrel. Since such plastic material cannot pass out of the nozzle, valve 80 then being closed, it is deposited ahead of the screw in the space or reservoir 39, thus causing a thrust load upon the screw in a direction to the right. Such thrust load causes the screw 36 to retreat in a direction to the right, thereby leaving an increasingly larger reservoir 39 for the accommodation of the plastic material forwarded by the feed screw. The amount of such accumulation of plasticized material depends upon the mold capacity. The force at which the screw will retreat is controlled by the hydraulic cylinder 56, to which the screw is connected through the medium of carriage 50. Referring to Fig. 4, at the described portion of the operating cycle valve 94 is closed, valve 98 is open, and pressure relief valve 100 is set so that the feed screw retreats under a given thrust load. During the retreating of the screw the oil from the cylinder 56 runs through pipes 90 and 102 back to the tank 88. During this interval of time, the separable mold parts are placed together, the mold being placed in such position relative to the plastic material injecting mechanism as to be filled thereby. When sufficient material has accumulated in the space or reservoir 39 ahead of the end of the feed screw, the carriage 50 will have retreated far enough to operate the limit switch 110 * * *. Thereupon, * * * the valve 94 is automatically opened, the valve 98 is automatically closed, and the piston 58 is subjected to high pressure, whereby to thrust the carriage 50 and the feed screw 36 toward the position at the extreme left. During such time, of course, the feed screw 36 continues to rotate, so that upon the completion of one

cycle and the closing of valve 80 the closing of valve 94 and the opening of valve 98 the above described cycle will be repeated."

Patentability requires a showing, in regard to the matter sought to be patented, of novelty, utility, and nonobviousness to a person having ordinary skill in the pertinent art. "The emphasis on nonobviousness is one of inquiry, not quality * * *". *Graham* v. *John Deere Co.*, 383 U.S. 1, 17 (1966). In conformity with the dictates of 35 U.S.C. § 103, as enunciated in *Graham*, I am required to examine the scope and content of the prior art; ascertain the differences, if any, between the prior art and the claims at issue; and resolve the level of ordinary skill in the pertinent art. *Ibid.* In this manner, the question of obviousness must be decided. There is also a question as to the novelty of the patent in suit, but what will be said as to obviousness will be dispositive of this case.

It is pointed out by defendant that the testimony of Willert himself failed to disclose the meaning of the word "forcibly" as used in conjunction with the word "yieldingly" in the critical clause of each of the claims relied upon. Accordingly, says the defendant, if Willert himself does not know what his invention is, and what "forcibly" stands for, the claims in question are hopelessly invalid. Defendant properly states that the public is entitled to know from reading the claims (to which we add the specifications) "where the scope of the protection ends in the Willert invention".

It is obvious to the Court, and I find and conclude, that the rearward reciprocation of the screw results from the pressure created by the progressive accumulation of plasticized material in the reservoir to the left of the screw. That pressure is partially counteracted by the narrowness of the outlet through which the hydraulic fluid is being forced by the movement of the piston in the

cylinder to the right. That counteracting pressure is manually regulated by the setting of the valve 100 controlling the rate of outflow of the hydraulic fluid from the orifice 62 through the valve 98 into the sump 88. The pressure opposing reciprocation is "yielding" by reason of the simple fact that the orifice 62 and the valves 98 and 100 permit the *gradual* exit of the fluid and consequently the *gradual* reciprocation of the screw.

I find as a fact, and it is conceded by the plantiffs, that each of the structural features of the Willert patent is disclosed in the prior art.

Willert items designated (a), (b), (c), (d), (e) and (g) above were old in the art.[5] Item (f) refers to unspecified "means" for opposing reciprocation of the screw in a manner characterized by the adverbial phrase "selectively forcibly but yieldingly". This phrase purports to *describe the manner* in which the retreat of the screw takes place. Claims 1 and 4 of the patent in suit do not *explain* this purported description of the manner in which the screw retreats. We will, however, refer to the specifications. Ordinarily, claims should be construed in the light of the specifications and drawings. However, patent claims which do not *define* the invention cannot be aided by reading into them parts of the specifications or of other claims. *White Machine Co.* v. *Bon Ton Cleaners & Dyers,* 190 F.Supp. 807, 810 (D.N.J. 1961).

According to the specifications,[6] the plastic material cannot pass out of the nozzle when valve 80 is closed, but is deposited ahead of the screw in the space or reservoir 39. This causes a thrust load upon the screws in a direction

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[5] Even if it is conceded, as plaintiffs contend, that the Vorraber patent teaches nothing which would affect the validity of the Willert patent, this would not minimize what I say hereinafter.

[6] Column 5, line 62, *et seq.*

to the right. As the screw retreats in that direction it leaves an increasingly larger reservoir behind [to the left of] it for the accommodation of the plastic material forwarded by the continuously rotating screw. The specification states that the amount of accumulation of plasticized material in the reservoir depends upon the mold capacity. That statement is not accurate. The actual obvious fact is that the amount of accumulation of plasticized material to the left of the screw depends upon the distance through which the screw retreats to the right, and that distance depends upon the position at which the limit switch (110) is manually placed to both limit the rearward movement of the screw carriage and to initiate the injection stroke.[1] As correctly stated in the specification, the limit switch is adjustable longitudinal of the bed along which the screw carriage travels so that the switch will be closed by contact by the carriage "* * * when the latter has traveled a predetermined distance to the right. As a result the volume of the plastic material receiving reservoir 39 may be adjusted so as substantially to equal the volume of the mold employed." The closing of the limit switch operates the solenoid of a valve which hydraulically opens valve 80 which allows the plasticized material in the space or reservoir 39 in advance of the feed screw to flow into the mold. The closing of the limit switch (110) also operates valves in the hydraulic system whereby oil under pressure moves the piston forward and thus thrusts the feed screw to the left which forces the plastic material out of the reservoir and injects it into the mold. The specifications correctly state: "The force at which the screw will retreat is controlled by the hydraulic cylinder 56, to which the screw is connected through the medium of carriage 50."

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[1] See Specifications, column 5, lines 1-8.

That force is limited by setting a pressure relief valve (100) to a given thrust load for the retreat of the feed screw. Nowhere else in the Willert specifications or claims is to be found an explanation of the phrase "means for selectively forcibly but yieldingly opposing the reciprocation of the screw in the passage in the rearward direction." It appears obvious to the Court that, in the operation of the Willert device, the limit switch is set at a point in the rearward path of travel of the screw carriage so as to equalize the volume of the reservoir space to the left of the screw with the estimated capacity of the mold. Thus, when the plasticized material in the reservoir substantially equals the capacity of the mold, the rearward travel of the screw ceases upon the tripping of the limit switch, and the screw, with its carriage and motor, is hydraulically forced to the left, thereby serving as a plunger to inject the accumulated quantity of plasticized material into the mold. It is therefore by means of the functioning of the hydraulic system, actuated by the pressure of the accumulation of material in the reservoir, and the respective settings of the limit switch and of the pressure relief valve, that the reciprocation of the screw is opposed selectively forcibly but yieldingly. The operation is induced selectively by the settings at which the limit switch 110 and pressure relief valve 100 are manually adjusted. The accumulation of the plasticized material in the reservoir forcibly impels the retreat of the screw, and the ratio between cross-section of the outlet 62 in the cylinder head to the volume of the hydraulic fluid between it and the piston head serves as the yielding cushion against which the piston head retreats.

Plaintiffs seek to overcome defendant's plea of obviousness under Section 103 by asserting that the prior art failed to teach or to suggest the use in an injection molding machine of "adjustable back pressure", a feature

which allegedly adds so conspicuously to the performance of the Willert machine.[8] Nevertheless, in a footnote on the same page, plaintiffs state: "The structure for applying an adjustable back pressure to a reciprocating screw was then [1950 and 1951] available (e.g., Wiedmann (D-8), Fig. 1, valve 10 and associated hydraulic circuitry) to any plastics injection molding machine designer who wanted to incorporate that feature in his machine." Wiedmann's hydraulic transmission patent, therefore, was a structural element old in the art and, as such, is a proper reference for determining obviousness of the claims in suit. See *Gould-National Batteries, Inc.* v. *Gulton Industries, Inc.*, 361 F.2d 912, 914 (3rd Cir. 1966). Section 103 of the Act expressly contemplates that the "subject matter sought to be patented and the prior art may differ" and yet render obvious the subject matter as a whole. Further, an invention may be new in the sense that nothing like it has previously existed, but if the difference between the new thing and that which was known before is not sufficiently great, requiring only the application of mechanical skill, then there may yet not be patentability. *Skee-Trainer, Inc.* v. *Garelick Mfg. Co.*, 361 F.2d 895, 899 (8th Cir. 1966). Willert claims novelty in the embodiment "in a reciprocating, rotatable screw plasticizer" of "means for controlling back pressure and controlling the shot size." He provides an appropriately-sized charge of plastics material in front of the rotating screw by regulating the length of rearward travel of the screw by manual adjustment of the tripping switch, limiting the retreat of the carriage bearing the screw and its power sources. Such a combination does not rise to the level of patentability. The opposition of the rearward movement of the screw by a constant, selected hydraulic force, or "back pressure", appropriate for the

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[8] Plaintiffs' brief, p. 43.

resin being molded, by means of the manual adjustment of the pressure relief valve in the appurtenant hydraulic circuitry of the Willert device would be a necessary physical consequence of the functioning of the elements of the combination, and the result of mechanical skill rather than inventiveness. Wiedmann's U.S. Patent 2,397,395, issued March 26, 1946, disclosed hydraulic transmission having means to impose a back pressure upon the motor thereof and means to remove or reduce the back pressure in response to a predetermined increase in the motor load. It claimed, in part, "a hydraulic transmission having a hydraulic motor, a pump for delivering motive liquid to said motor to energize the same and a resistance normally effective to resist the discharge of liquid from said motor to thereby impose a back pressure upon said motor * * *." Willert's "back pressure" is created and regulated by the hydraulic system appurtenant to, but not claimed as an element of, his invention. The teaching of Wiedmann forms part of the prior art relevant to the issue of obviousness. *Skee-Trainer, Inc.* v. *Garelick Mfg. Co.*, supra, at 898, where the Court stated: "* * * 'prior art' may include not only earlier devices and publications but also similar devices whether or not in related areas to the patented device and with respect to a simple mechanical device utilizing universally known principles permits referring to the field of mechanics itself."

The "means for selectively forcibly but yieldingly opposing reciprocation of the screw in the passage in a rearward direction" and the "means responsive to a predetermined length of travel of the screw in a rearward direction for positively thrusting the screw in the passage in a forward direction to feed the plasticized material out of the forward end of the barrel", referred to in Claims 1 and 4 of the patent in suit, do not constitute patentable invention, and the description of their functioning was obvious in the

light of the prior art to which the device described in the patent belongs. "It has been recognized since *Knapp* v. *Morss*, 150 U.S. 221, 14 S.Ct. 81, 37 L.Ed. 1059, decided in 1893, that patentable invention consists in the embodiment of *new and useful means* to achieve a desired result and not in the *functions attributed to* the means." (Emphasis supplied) *General Radio Company* v. *Superior Electric Company*, 321 F.2d 857, 862 (3rd Cir. 1963) cert. denied 376 U.S. 938 (1964) reh. denied 376 U.S. 973 (1964).

We need not consider the effect of such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., in this case. As was brought out upon the direct examination of Willert by defense counsel, it is obvious that the so-called Egan Machine with the trade mark Reciproscrew is not the embodiment of the Willert patent under which it has an exclusive license. What was said by the Court in *Photon, Inc.* v. *Harris-Intertype Corp.*, 235 F. Supp. 921, 927 (D. Mass. 1964), aff'd. per curiam 349 F. 2d 856 (1st Cir. 1965), cert. denied 382 U.S. 1011 (1966) sub nom. *Tansel* v. *Photon, Inc.*, is equally applicable here, and I quote: "It is significant to note that plaintiff * * * did not come into court and offer evidence of having previously marketed a machine based on the * * * [Willert patent] which has enjoyed any commercial success whatsoever and which * * * [plaintiff] claims defendant has pirated." (Insertions mine) The Egan machine does *not* have means for selectively opening and closing the forward end of the passage, has *no* limit switch, but does have *a time delay in conjunction with a limit switch which is supplied, upon conversion of the machine, by customers themselves.* The Willert patent *does not* teach a time delay. There is nothing in the Willert patent which provides for *stopping* the operation of the cycle. The Willert patent teaches that the reciprocating screw rotates *continuously*. In addition, the Egan machine utilizes an

electrical drive whereas the Willert machine utilizes an hydraulic drive. The testimony indicates that the Egan machine more closely resembles the in-line reciprocating screw plasticizers manufactured by the Ankerwerk Company of Germany. At page 1122 of the trial transcript, Willert was asked: "Would you please explain to the Court the differences or similarities, whatever may be, between the Ankerwerk machine and the Egan machine?" Willert answered, at page 1124: "Well the operation of the Ankerwerk and the Egan machine, as our customers use them, is for all practical purposes identical." Despite this, Egan sought protection for the machine, which it manufactured, by selling it under the Willert patent.

Finding that the patent in suit is invalid, I do not reach the issue of infringement since an invalid patent cannot be infringed.

The foregoing constitutes the Court's findings of fact and conclusions of law, in compliance with F. R. Civ. P. 52(a). Present an appropriate order.

REYNIER J. WORTENDYKE, JR.,
Judge, United States District Court.

APPENDIX B

UNITED STATES COURT OF APPEALS

FOR THE THIRD CIRCUIT

No. 16446

FRANK W. EGAN & COMPANY AND
WILLIAM H. WILLERT,

Appellants

v.

MODERN PLASTIC MACHINERY CORP.

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF NEW JERSEY

Argued June 9, 1967
Before STALEY, *Chief Judge*, KALODNER, *Circuit Judge* and SHERIDAN, *District Judge*

Opinion of the Court.

(Filed December 29, 1967)

By KALODNER, *Circuit Judge*

Did the District Court correctly apply the controlling legal test of "obviousness" of Section 103 of the Patent Act of 1952, 35 U.S.C.A.,[1] in holding,[2] in the instant patent

[1] Section 103 provides as follows:

"A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made. July 19, 1952, c. 950, § 1, 66 Stat. 798."

[2] The District Court's opinion is reported at 260 F. Supp. 22 (D.N.J. 1966).

infringement action, that Claims 1 and 4 of Patent No. 2,734,226 were invalid for lack of invention and obviousness in the light of the prior art?

The mooted patent for an "Injection Molding Apparatus" was issued to the plaintiff William H. Willert on February 14, 1956. The patent relates to a plastics injection molding machine for plasticizing and delivering to a mold plastics materials at high speed and under high pressure, and under critically controlled conditions. The plaintiff, Frank W. Egan & Company, is the exclusive licensee of the patent. The Defendant, Modern Plastic Machinery Corp. is charged with infringement of the patent by selling and installing in the United States infringing plastics injection molding units and machines built in Germany.

The District Court did not decide the issue of infringement. It did, however, enjoin the plaintiffs from threatening infringement or instituting actions for infringement against the defendant or its privies.

It is undisputed that Willert's patent is a "combination" patent; viz., a combination of old structural elements. Plaintiffs urge, however, that Willert's new combination of old structural elements, subsequently discussed, "has all the traditional hallmarks of patentable invention". The defendant, in reply, contends that the District Court did not err in its holding of "obviousness"; further, that Willert's patent did not contribute to the molding art.

What has been said brings us to resolution of the question as to whether the differences between Claims 1 and 4 of the Willert patent and the pertinent prior art would have been obvious to a person having ordinary skill in the art. 35 U.S.C.A. § 103; Graham v. John Deere Co., 383 U.S. 1 (1966); United States v. Adams, 383 U.S. 39 (1966). The latter cases are a guiding beacon and we sought to follow its course in Schmidinger v. Welsh, 383

F.2d 455 (1967) and Jones Knitting Corporation v. Morgan, 361 F.2d 451 (1966).

Applying the teachings of the *Graham* and *Adams* cases, we have reached the conclusion that the claimed invention was not "obvious" within the statutory meaning, and we must accordingly reverse the judgment of the District Court. Regrettably, the District Court did not follow the preferred procedure of deciding the issue of infringement; consequently, the cause must be remanded for further proceedings.

A plastics injection molding machine consists of two basic units: the injection unit, to which the Willert invention relates, and the mold. The injection unit includes, generally, a feed hopper, a plasticizing chamber, an injection chamber (which may be, and often is, the plasticizing chamber, as well) and various controls and power equipment. Plastics resin, or resins, in pellet or powder form, are introduced through the feed hopper into the plasticizing chamber of the injection unit. The pellets or powder are melted and homogenized in the plasticizing chamber. Subsequently, a quantity of the melted and homogenized resin is forcibly injected into the mold.

The mold is designed to produce a part, or a number of parts, of desired shape and size, e.g., cups, plates, bottle caps, etc. After injection, the mold is held in closed position to allow the injected resin to cool. The mold is next opened, the molded article removed and the mold closed. The injection cycle and the mold cycle are then repeated.

The industrial problem centers about the production at a high rate of output of a thermally stable melted resin having a uniform temperature and viscosity. The conventional means employed was to heat the outside of the plasticizing chamber, a method which did not satisfactorily cope with the fact that plastics resins are notably poor

heat conductors. Overheating causes decomposition of the resin. Application of heat to the exterior walls of the plasticizing chamber frequently resulted in overheating or burning the resin nearer the wall by the time the center of the resin was sufficiently heated. Frequently, there was an uneven distribution of heat, and the mixture was not homogeneous. The problems of achieving uniform temperature and viscosity were increased by the development of improved resins and of new resins having properties which made them attractive for various end uses, but which were difficult to plasticize and to mold.

The key to successful molding is proper plasticization. It was believed that this could not be obtained without improvement in the design of the injection cylinder. Actually, the problem was related to heat application and its control as applied to the injection cylinder. It does not appear that, prior to Willert, designs of the injection cylinder were more than partially successful.

The inventor recites in detail recognition of the technical difficulties centering around the problem of designing a machine to deliver a consistent mass of thoroughly homogenized plastic material at a uniform rate and temperature under pressure to a mold.

Claims 1 and 4 of the Willert patent, except for the preamble to Claim 4, are identical.[3] They define Willert's

[3] Claim 1, as set forth in the patent issued, reads as follows:

"1. A plastic material plasticizing and delivering mechanism comprising a barrel having a passage extending longitudinally therein, a rotatable and reciprocable screw for feeding plastic material toward the forward end of the screw, means for feeding plastic material between the screw and the wall of the passage at a point spaced from the forward end of the screw, means selectively opening and closing the forward end of the passage, means for rotating the screw, means for selectively forcibly but yielding opposing reciprocation of the screw in a rearward direction, and means responsive to a predetermined length of travel of the screw in a rearward direction for positively thrusting the screw in the passage in a forward direction to feed the plasticized material out the forward end of the barrel."

improved combination, and set forth the essential elements of the invention. Divided into its various components, and omitting reference numerals from the patent drawings, the invention, is set forth by the plaintiffs as follows:

> "A plastic material plasticizing and delivering mechanism comprising
>
> (a) "a barrel having a passage extending longitudinally therein,
>
> (b) "a rotable and reciprocal screw for feeding plastic material toward the forward end of the screw,
>
> (c) "means for feeding plastic material between the screw and the wall of the passage at a point spaced from the forward end of the screw,
>
> (d) "means selectively opening and closing the forward end of the passage,
>
> (e) "means for rotating the screw,
>
> (f) "means for selectively forcibly but yieldingly opposing reciprocation of the screw in the passage in a rearward direction,
>
> (g) "and means responsive to a predetermined length of travel of the screw in a rearward direction for positively thrusting the screw in the passage in a forward direction to feed the plasticized material out the forward end of the barrel."

The inventor claims that his apparatus produces a homogeneous mass of plastic compound free of volatile matter air, or other condensable substances, in an optimum plasticized state to be injected into either a mold or transfer cylinder. He sets forth that the resulting

molded article is characterized by its uniformity, freedom from strain, and the faithfulness which it follows even the finest and most intricate details of the mold cavity. He says that his invention provides a mechanism in which the plastic material is thoroughly mixed and plasticized, as well as brought to a uniform desired temperature before injection into the mold, whereby lower injection and mold clamping pressures are possible than heretofore, and also whereby the plastic material is subject to shorter total heating cycle than was otherwise possible.

In operation, the pellet or powder resin is fed through a hopper into the plasticizing and delivering barrel in which an in-line screw is positioned for rotating and reciprocating movement. Not only does the screw reciprocate forwardly and rearwardly, within the barrel, but the entire injection unit may be moved toward or away from the mold supporting structure. By the time the thermoplastic material reaches the end of the screw, it is thoroughly plasticized, by reason of its continually being worked between the screw and the bore of the barrel and its subjection to heat within the barrel. Since the material cannot pass out of the forward end (nozzle) during this process, it is deposited in the barrel ahead of the screw, thus causing a rearward thrust upon the screw and forcing it to retreat, thereby increasing the accommodation for the material forwarded by the feed screw, as it rotates. The amount of such accumulation of plasticized material relates to the capacity of the mold into which it is to be injected. The force at which the screw will retreat is selectively controlled by a hydraulic cylinder to which the screw is connected through the medium of a carriage. A pressure relief valve is set so that the feed screw retreats under a given thrust load. A limit switch is provided on the bed of the injection unit, so that when the latter has traveled a predetermined distance rearward the retreat will be stopped. As a result,

the volume of plastic material received in the barrel forward of the screw may be adjusted so as to substantially equal the volume of the mold employed. This, in effect, controls the "shot size". As a result of the closing and opening of the various solenoid operated valves, the screw is then hydraulically thrust forward to bring about the injection of the plastic compound through the now-opened nozzle at the forward end of the barrel and into the mold employed.

The adjustable "back pressure" is element (f) and the shot size control feature is element (g) above. These are the essence of Willert's claimed invention.

It is the concept of the inventor that the controlled back pressure creates optimum mixing and plasticizing for a given material. As we understand it, it is his claim that controlled back pressure is essential. Because they vary in such properties as viscosity and heat sensitivity, different plastics materials require different amounts of mechanical working to reach a proper state of plasticization. The amount of working depends primarily upon the magnitude of internal forces generated in the material as it moves along the rotating screw. This sheer stress is increased or decreased by varying the amount of back pressure. Back pressure creates internal heat in the mixture, thereby increasing uniformity of heat dispersal and enabling a lower degree of external heat. The degree of mixing required to create a properly homogenized "charge" depends upon, and is controlled by, the amount of back pressure. In addition, the use of an appropriately selected back pressure results in properly degassing the plastics material as it is moved forwardly in the barrel through the travels of the rotating screw. The shot control, of course, eliminates the problems attendant upon inadequacy of the "charge" to complete the mold, or overabundance of the "charge", which may result in lack of homogeneity of the next "charge".

The evidence, in our opinion, amply supports the commercial success of the apparatus in the industry, and the long-felt, unsatisfied need previously existing.

THE PRIOR ART AND VALIDITY.

The District Court concluded that the claimed invention, in the light of the prior art, would have been obvious to a person skilled in the art. Relied upon are eight references in the plastics injection molding machine field: Italian Patent 420,839; Goessling patent 2,359,839; German patent application 176,425; Cousino patents 2,402,805 and 2,471,813; Dinzl patent 2,493,805; Willcox patent 2,629,132, and a 1951 article by Beck. All of these were recited by the patent 2,492,720 for a hydraulic drive and speed control, the District Court relied upon the Wiedmann patent 2,397,395, relating to a hydraulic transmission system; the Tyler patent 2,492,720 for a hydraulic drive and speed control, and the German Vorraber patent 180,007 which disclosed an apparatus for the manufacture of artificial stones and brick.

We do not stop to detail the content of these citations, for they are fully set out in the reported decision of the District Court. We have no doubt that elements of the claimed invention (a) through (e), as set out above, were disclosed prior to Willert. The file wrapper clearly shows the issue before the Patent Office was reduced to elements (f) and (g), and whether these elements were either a part of the prior art or at least obvious to a person skilled in the prior art. Indeed, the file wrapper specifically shows the citation of the Dinzl patent as disclosing a limit switch to control the length of travel of the plunger.

In view of the file wrapper history, we think the Patent Office conclusion is entitled to weight, and its determination in issuing the patent enables the plaintiffs to start with the presumption of validity. However, the file wrapper would indicate a narrow construction of the patent.

Appendix B

As stated in Ling-Temco-Vought, Inc. v. Kollsman Instrument Corp., 372 F.2d 263 (2 Cir. 1967):

> "Whether or not it [the patent] is to be classified as a combination patent or an improvement patent or both is in this case largely a matter of semantics. As Judge Learned Hand phrased it in B. G. Corp. v. Walter Kidde & Co., 79 F.2d 20 (2 Cir. 1935): 'All machines are made up of the same elements * * * But the elements are capable of an infinity of permutations, and the selection of that group which proves serviceable to a given need may require a high degree of orginality. It is that act of selection which is the invention.'" 372 F.2d at 268.

The plaintiffs here do not deny that the elements of the apparatus involved are old. Their concession includes the hydraulic system, as to which, in a different context, Weidmann shows a form of "back pressure". But the use in a remote cited art certainly suggests it to be less likely that a person of ordinary skill in the pertinent art would have arrived at the result achieved by the patent in suit. Ling-Temco-Vought, Inc. v. Kollsman Instrument Corp., *supra;* Formal Fashions, Inc. v. Braiman Bows, Inc., 369 F.2d 536 (2 Cir. 1966); Ric-Wil Co. v. E. B. Kaiser Co., 179 F.2d 401 (7 Cir. 1950). In any event, the mere fact that the elements are concededly old does not itself militate against patentability, as the District Court seems to suggest.

Here, in our view, Willert employs a method of achieving the result needed by the industry conceptually different from that disclosed by the prior art, and indeed, uses the hydraulic "back pressure" in a manner neither indicated by the prior art nor obvious to a person skilled in the art, at least on the record of this case. We do not think that the reference to "back pressure" in the Cousino patent 2,402,805, may be read as bearing on the invention in suit. And while back pressure may have resulted with respect to the

retreat of the hydraulic fluid in the Italian patent, adjustable back pressure was not mentioned, and the resultant back pressure was inconsequential and not conceptually related to the invention. It remained for Willert to recognize that adjustable back pressure, of sufficient magnitude, created through the use of hydraulic force opposing the retreat of the screw, resulted in eliminating substantial problems of the industry. It is the back pressure which causes more internal heat to be generated, obtaining greater uniformity of heat and its distribution, so essential to the proper plasticization and homogenization of the plastics material; speeds up the process, and reduces the likelihood of air bubbles and similar disruptive occurrences. Notwithstanding the protestations of the defendant, the record adequately demonstrates that its own experts hailed the precise point of Willert's invention, the importance of the concept and its significance.[4]

In summary, we conclude that the Willert invention is novel, has utility and not obvious to one having ordinary skill in the art to which its subject matter pertains, and that it represents a significant advance in the field. In doing so we have given measured weight to the "secondary considerations" of "commercial success, long felt but unsolved needs, [and] failure of others" to achieve the result acknowledged as relevant indicia, in Graham v. Deere, *supra*, and in United States v. Adams, *supra*. See Jones Knitting Corporation v. Morgan, *supra*, at page 458.

For the reasons stated, the Judgment of the District Court will be reversed, and the cause remanded with directions to proceed in accordance with this Opinion.

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[4] The defendant's executive vice-president, Leslie J. Kovach, in a paper which he presented to the American Society of Mechanical Engineers, evaulated the "in-line reciprocating screw" of the *Willert* patent as a "great advance in the processing and economy of plastic materials", and the adjustable back pressure functioning of the reciprocating screw as "the real break-through in this new plasticizing concept". The paper, incidentally, was presented in late 1964, after the instant suit was commenced.

APPENDIX C

UNITED STATES COURT OF APPEALS

FOR THE THIRD CIRCUIT

No. 16,446

FRANK W. EGAN & COMPANY and
WILLIAM H. WILLERT,

Appellants,

vs.

MODERN PLASTIC MACHINERY CORP.

(D. C. Civil Action No. 274-64)

ON APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

Present: STALEY, *Chief Judge*, KALODNER, *Circuit Judge*, and SHERIDAN, *District Judge*.

JUDGMENT

This cause came on to be heard on the record from the United States District Court for the District of New Jersey, and was argued by counsel.

On consideration whereof it is now here ordered and adjudged by this Court that the judgment of the said District Court, filed December 12, 1966, be, and the same is hereby reversed, with costs, and the cause remanded with directions to proceed in accordance with the opinion of this Court.

December 29, 1967

ATTEST:

THOMAS F. QUINN,
Clerk.

Received & Filed
Dec 29 1967
Thomas F. Quinn, Clerk

APPENDIX D

UNITED STATES COURT OF APPEALS

FOR THE THIRD CIRCUIT

No. 16,446

FRANK W. EGAN & COMPANY and
WILLIAM H. WILLERT,

Appellants,

vs.

MODERN PLASTIC MACHINERY CORP.

Sur Petition for Rehearing

Present: HASTIE, Chief Judge, McLAUGHLIN, KALODNER, STALEY, SMITH, FREEDMAN, SEITZ, VAN DUSEN, Circuit Judges and SHERIDAN, District Judge.

The petition for rehearing filed by Appellee in the above entitled case having been submitted to the judges who participated in the decision of this court and to all the other available circuit judges of the circuit in regular active service, and no judge who concurred in the decision having asked for rehearing, and a majority of the circuit judges of the circuit in regular active service not having voted for rehearing by the court in banc, the petition for rehearing is denied.

By the Court,

KALODNER,
Circuit Judge.

Dated: February 1, 1968.

Received & Filed
Feb 1 1968
Thomas F. Quinn, Clerk

APPENDIX E

Excerpt From the Court of Appeals' Opinion

"* * * the record adequately demonstrates that its own experts hailed the precise point of Willert's invention, the importance of the concept and its significance.'"

* * *

"'The defendant's executive vice-president, Leslie J. Kovach, in a paper which he presented to the American Society of Mechanical Engineers, evaluated the 'in-line reciprocating screw' *of the Willert patent* as a 'great advance in the processing and economy of plastic materials,' and the adjustable back pressure functioning of the reciprocating screw as 'the real breakthrough in this new plasticizing concept.' The paper incidentally was presented in late 1964, after the instant suit was commenced." (italics added.)

Excerpt From the Article "Screw-Injection Process and Equipment"

by LESLIE J. KOVACH

"Injection molding with the in-line reciprocating screw proved to be a great advance in the processing and economy of plastic materials."

* * *

"The actual charging of the front chamber under controlled back pressure is the real breakthrough in this new plasticizing concept."

APPENDIX F

Title 35 of the United States Code provides in pertinent part:

SECTION 101. Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

SECTION 102. A person shall be entitled to a patent unless—

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States • • •

SECTION 103. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

• • •

SECTION 112.

• • •

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to

cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

• • •

SECTION 282.

• • •

The following shall be defenses in any action involving the validity or infringement of a patent and shall be pleaded:

(2) Invalidity of the patent or any claim in suit on any ground specified in part II of this title as a condition for patentability,

(3) Invalidity of the patent or any claim in suit for failure to comply with any requirement of sections 112 or 251 of this title.

• • •

Rule 52 of the Federal Rules of Civil Procedure provides in pertinent part:

• • •

Findings of fact shall not be set aside unless clearly erroneous, and due regard shall be given to the opportunity of the trial court to judge of the credibility of the witnesses.

• • •